Electoral Process in Ceará Municipalities and Occurrence of Political Budget Cycles

ABSTRACT

Objective: this article aims to evaluate whether the electoral process in municipalities of Ceará can exert influence on the budget execution of public expenditure.

Method: use of linear regression with the use of several variables (dependent variable - re-election; independent variables - investment expenditure, credit operations, remains payable, voluntary transfers, budget result, cash generation. IDEB, IDHM and federal political alignment) to assess the existence of political-budgetary cycles.

Originality/Relevance: tests other variables that may be associated with the Theory of Political Budget Cycles.

Results: independent variables (investment expense, credit operations, remains payable, voluntary transfers, budget result, cash generation. IDEB, IDHM and federal political alignment) were individually confronted with the dependent variable re-election, and only the variables balance of remains to pay processed, credit operations and investment expenses were considered significant.

Theoretical/Methodological contributions: the study tests the theory based on other socioeconomic variables not yet explored in previous studies, which contributes to new strands of research by researchers.

Social/Management contributions: It highlights that any variable of the socioeconomic type can assist in the permanence of politicians in power, in view of their manipulation. In practice, it points out that certain variables are more susceptible than others.

Keywords: Expenditure. Budget cycle. Election. Ceará.

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1 INTRODUCTION

The Theory of Public Choice was developed as a result of observations of how people behave in the political system in an effort to further their personal interests (Smith & Larimer, 2009). According to Vicente and Nascimento (2012), it contradicts the ideas of effectiveness and efficiency and affronts the population's expectations, which are for the execution of public policies that foster well-being and hospitability. This theory gave rise to two lines of research: the *theory of political business cycles and the theory of political budget cycles*, with Nordhaus et al. (1989) observing the intercession between political and economic systems: on the one hand, voters are concerned about the economy, and on the other, power is the focus of politicians.

Rogoff (1990) and Rogoff and Sibert (1990) introduced the theory of political-budgetary cycles (1988). They indicated that fiscal policy instruments are used by governments to appear competent in their mandates, often using information asymmetry, which allows the distortion of pre-election fiscal policy, and boost the chances of re-election. Guerra et al. (2018) confirm the proximity between the electoral agenda and the dynamics of state public spending, where the electoral calendar influences fiscal and public expenditure execution, indicating an opportunistic conduct of public resources, aiming to keep power in the hands of a manager or political group. In this sense, Ferreira et al. (2019) affirm that the correct manipulation of economic and/or fiscal policy instruments makes it possible to maximize the positive visualization of a government or party.

Considering this approach, this research aimed to analyze a possible relationship between budget execution and political cycles, to answer the following question: is the electoral process of municipalities in the State of Ceará capable of exerting influence on the budget execution of municipal public expenditure?

In twelve municipalities of Ceará, we analyze budgetary data, GDP indices, IDHM, IDEB, and the political alignment of mayors with the State Governor and the President of the Republic to find evidence of the existence of political-budgetary cycles. The data collected between 2000 and 2016, and their analysis aims to identify the variables that managers used in electoral processes to maintain their positions of power. With this, the study aims to identify the continuity of the relationship of some of the variables mentioned in the literature and others not identified in previous studies, such as the generation of cash flows, budget results and receipt of voluntary state and federal transfers.

The study's contributions involve testing some variables that have already been discussed in previous research and looking for additional variables that might be able to affect managers' behavior in the months before the election. Due to the argument that managers running for re-election or those chosen by them can use the structure of public administration to their advantage, scientific works of this kind may reveal changes in behaviors (old variables) and/or trends that have not yet been observed (new variables). Such studies demonstrate their relevance to the extent that they can help in the legislative process by instituting/updating mechanisms that prevent such practices or by simply introducing the discussion within society and alerting it to possible political manoeuvres. In addition to this introduction, the study is divided into the following sections: theoretical foundation, followed by the methodological procedures adopted, analysis and discussion of the results, as well as the respective conclusions.

2 THEORETICAL RATIONALE

The public budget is the instrument by which government action enables its public policies. The planning focused on how this budget will be applied is what can ensure that the goals set by managers will be achieved (Couto & Cardoso Jr.; 2018), and cannot be unrelated to budget issues, since any plan would lack the resources to become a reality (Ho, 2018).

In Brazil, the first legal rule to establish budgetary principles was Law No. 4,320 (1964). Considered a milestone in terms of public finances, it unified and standardized both budgets and public balance sheets in the three spheres, being in force to this day. It came to complement Decree No. 4,536 (1922), which created the Public Accounting Code. Law No. 4,320 (1964) together with Decree-Law No. 200 (1967) inserted planning as a primary tool for the Brazilian budget system, through the Annual Program Budget (Gadelha, 2017).

According to Couto and Cardoso Jr. (2018), the Federal Constitution (1988) improved this vision through the mandatory Multiannual Plan - PPA and defined that the Legislature would oversee formulating public policies for resource collection and allocation through the Budget Guidelines Law (LDO). Thus, the Constitution sought to rescue public planning from a budgetary perspective, introducing a law that is guiding the budget law, and, in relation to both, another – the PPA, of a strategic character and of connection between them.

Monitoring the annual budget application allows for the observation of the cash performance and can generate precious information about the public manager's performance (Vicente & Nascimento, 2012). Unfortunately, public policies maintain coherence with each other on technical or political issues and those in the budget that can possibly guarantee the well-being of the population have sometimes proved to be guarantors of the benefits of those who lead to the preparation of budget pieces.

This dichotomy between the public budget applied to ensure the well-being of society and the existence of groups working to meet their needs, originated the Theory of Public Choice, which seeks to explain how public managers manipulate information to obtain electoral advantages to remain in power (Nascimento, 2011). This theory originated two other lines of research: the *theory of political-economic cycles or political business cycles* that studies the relations of politics with macroeconomics in general; and the *theory of political budget cycles that reflects on* fiscal policy, specifically the structure of the public budget and its execution. The two seek to understand the opportunistic behavior of the rulers (Oliveira, 2008).

For Queiroz and Silva (2011), the political budget cycles in Brazil are the behavioral pattern of occurrence most likely when a representative seeks to increase his chances of re-election. For Drazen (2000), budgetary political cycles are simpler cycles to be operated, being perceptible in virtually all managements, and their occurrence is directly related to the joviality of democracies.

Also, according to Queiroz and Silva (2011), one of the main pillars for the existence of political budget cycles is the signaling of competence. In essence, most politicians seek to build through the manipulation of budgets this mask of competence to maximize the chances of perpetuation in power. Thus, studies on the Political-Budgetary Cycles, due to citizen importance, deserve to be highlighted and deepened because public management is a basic item for the development of any nation and the budget use for the perpetuation of power is inglorious and outrageous.

Fialho (1999) was one of the first researchers to analyze that political cycles occur as an explanation for the characteristics of Brazilian politics. It proved the positive relationship between the electoral period and monetary policy, which was ratified by Silva (2016), Guerra et al. (2018), and Dias et al. (2018).

Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

526

In the studies analyzed for this research, it was possible to verify that most voters prefer candidates who raise public spending, and it was observed that the election year exerts significant influence on this behavior of public management. This conclusion is supported in studies conducted by Guerra et al. (2018), Queiroz et al. (2019) and Crispim et al. (2021) observed an increase specifically in investment expenditures, and Sakurai (2009) in current expenses. Queiroz and Silva (2011) identified that the political alignment between mayor, governor and president of the Republic provides a greater flow of voluntary transfers, and Arvate et al. (2010) identified the coalition between small and large municipalities to force federal transfers. It was also observed by Oliveira and Carvalho (2009), Arvate et al. (2010) that municipalities with low educational level re-elect more mayors. Of the authors surveyed, Sakurai (2009) observed differences in spending according to the political party ideology of the rulers, which did not occur in the research by Guerra et al. (2018), while Queiroz and Silva (2011) observed that there has been a decrease in the magnitude of the cycles.

3 METHODOLOGY

According to its type, this is a quantitative study. As for the goals, this is an explanatory study because it has the potential to define a situation or event and show how they relate to one another (Gray, 2012). As for the nature of the results, the research fits as applied since it sought to generate knowledge to identify a recurrent opportunistic behavior of the political class. It is also practical-experimental since variables are experienced in a statistical model with logistic regression. Regarding the procedures, the research was considered documentary, because it was used the analysis of information and historical series of 4 budget cycles between 2000 and 2016.

In this research, all municipalities of Ceará were considered as universe, and the sample comprised the clipping of municipalities that gathered 50% + 1 of the inhabitants of Ceará during the period between 2000 and 2016. According to data collected at the Institute of Research and Economic Strategy of Ceará (IPECE, 2019), this list composes 12 municipalities: Fortaleza, Caucaia, Juazeiro do Norte, Maracanaú, Sobral, Crato, Itapipoca, Maranguape, Iguatu, Quixadá, Canindé and Aquiraz. Table 1 shows the average values of GDP, IDHM and LOA's approved for these municipalities.

Table 1

Municipalities of Ceará participating in the sample - period 2000 to 2016

Municipalities*	Average period - 2000 to 2016		
	GDP (R$) *	IDHM**	LOA appgoer (R$) ***
Fortaleza	31.838.002,95	0,651	3.403.235.057,23
Caucaia	2.624.353,36****	0,549	291.062.036,67
Juazeiro do Norte	1.890.459,78	0,552	214.652.651,14
Maracanaú	3.945.608,12	0,560	344.764.060,47
Sobral	2.196.644,98	0,552	300.730.593,03
Crato	805.003,90	0,578	116.454.754,64
Itapipoca	653.230,04	0,483	107.644.401,32
Maranguape	677.919,47	0,517	93.335.900,78
Iguatu	740.553,60	0,539	102.682.493,20
Quixada	466.422,71	0,522	76.633.839,66
Canindé	331.812,71	0,454	78.300.821,82
Aquiraz	790.226,25	0,489	86.104.827,62

Source: *IPECE (2000 a 2016); **PNUD (1991 - 2000 - 2010); *** STN e TCE-CE (2000 a 2016); e **** STN (2000 a 2016).

All data collected for the research underwent statistical treatment using *the Software Statistical Pakage for Social Sciences (SPSS,* version 26.0). The following simple linear regression model was used in this study:

Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

527

$$Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

$$Y_i = \begin{cases} 1 \\ 0 \end{cases}$$

$$E(Y_i) = \beta_0 + \beta_1 X_i$$

In this model the indicator variable Y corresponds to the occurrence of re-election or reappointment of the party, and the predictor variable X corresponds to the independent variables. The response function shows the probability of re-election or reappointment of the party, given the budget variables and the other variables present in the model.

The variable dependent on the logistic equation is the re-election (re-election) of the municipal chief executive or the re-renewal (recond) of the political situation group, with the election of an ally. Thus, *dummie* indicative was inserted to point out whether the politician was running for re-election (1) or not (zero), as well as whether there was the re-leadership of the same party or coalition in the next term (recond). Each year of the elective term had an identification: t_1 for the post-election year, t_2 for the intermediate year, t_3 for the pre-election year, t_4 for the election year. *Dummies* assume value 1 for the year to which they refer and zero for the other. Sixteen independent variables were considered for the equation, of which two are binary variables (*dummies*). The first refers to the state political alignment, when the mayor is from the same party or coalition as the Governor of the State (aliado_gov); and the second refers to the alignment with the federal government when the mayor is from the same party or coalition of the President of the Republic (aliado_pres), being assigned 1 (one) if there was such alignment and 0 (zero) otherwise. Two variables related to financial liabilities were used: balance of remains to be paid that were processed (saldo_rp_oproc) and balance of unprocessed remains to be paid (saldo_rp_não proc). A *proxy* was adopted for the budget result_orc () which refers to the difference between budget revenue and budget expenditure. The current budget result is the quotient between the total revenue collected and the total expenditure committed by the municipality. Cash generation/consumption (ger_caixa) points to the cash situation after the comparison between the year-end available and the cash balance at the beginning of the following year. The variables referring to voluntary transfers (trvol_união and trvol_estado), whether from the Union or the States, are generally tied to the alignment of municipal managers with the state and federal government and refer to the financial resources passed on to municipalities or their entities, with the conclusion of agreements or another similar instrument. The table of variables also includes tax revenues (rec_trib) and credit operations (op_cred). As for current expenditure, personnel, and expenditure expenses (desp_pessoal+enc) and investment expenses (desp_invest) were included in the model. Two indicators were added to the model: one of economic performance: municipal GDP and the Basic Education Development Index (*IDEB*).

For this research, secondary data were used. The data regarding budget variables come from the database provided by the National Treasury Secretariat (STN, 2019) from *www.stn.gov.br*. The electoral data related to electoral processes (election, re-election, reappointment, party, or coalition of the elected candidate), of the twelve municipalities studied during the period from 2000 to 2012, were accessed from the website www.tse.gov.br of the Superior Electoral Court (TSE, 2019). Information on the Gross Domestic Product - GDP of the municipalities was obtained from the database of the Institute of Research and Economic Strategy of Ceará (IPECE) (www.ipece.ce.gov.br). The Municipal Human Development Indexes (IDHM) were accessed from the database of the United Nations Development Program (UNDP, 2019) branch in Brazil (www.br.undp.org/content/brazil/pt/home.html). Information regarding the Basic Education Development Index - IDEB was obtained from the website of

Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

528

the National Institute of Educational Studies and Research Anísio Teixeira (INEP) (ideb.inep.gov.br).

4 RESULTS

Initially, it was observed that the magnitude of the data from the budget execution of the Municipality of Fortaleza could interfere with the examinations performed. Thus, we chose to perform the multicollinearity test with and without the municipality. By including the municipality, 9 (nine) variables were without multicollinearity and were viable to be tested in the model proposed for this research: result_orc_100mil, trvol_uniao_10mil, trvol_estado_10mil, IDEB, aliado_gov, aliado_pres, part_dir, part_cent, reelei and recond. However, when testing the model with these variables, it was not *possible for the software* to calculate the covariance matrix and, consequently, the logistic regression statistics.

Successive tests were performed to find the best parameterization, and only by excluding the Municipality of Fortaleza and considering exclusively the data for the election year and the year after the election were the results of multi-linearity satisfactory for most variables, except for the following: the current budget result, tax revenues, personnel expenses and charges, and GDP. Considering the decision to exclude the municipality of Fortaleza, the SPSS generated all estimates of logistic regression for the variables that did not present multilinearity, as observed below in Table 2.

Table 2
Omnibus Tests of Model Coefficients

		Chi-square	Df	Itself.
Step 1	Step	51,461	24	0,001
	Block	51,461	24	0,001
	Model	51,461	24	0,001

As a result of the test of the general index of adjustment of the model, *p-value* (or Sig.) greater than 0.05 (as well as less than 0.10) was obtained, which indicates that the data entered in the model are adequate to perform a logistic regression analysis.

Table 3
Hosmer and Lemeshow test for predictive accuracy

Step	Chi-square	df	Itself.
1	4,579	7	0,711

Table 3 presents the Hosmer and Lemeshow Test (2000), which provides a predictive accuracy measurement based on the prediction of the dependent variable, i.e., and proves whether the proposed model can explain well what is observed. In this test, the null hypothesis is H_0: the data adjustment is good, so it is expected to accept the hypothesis, with p-value not significant. As p-value (Sig.) > 0.05 (and greater than 0.10 as well), the test indicates that the data are adequate for a logistic regression.

Table 4
Model fit quality statistics

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	39,974[a]	0,541	0,722

Among the model fit quality measurements, we have the pseudo-R^2 (From Cox & Snell and Nagelkerke's) in which, the closer to 1, the greater the model fit. In the results of the tested model, the adjustment can be considered good, as it was estimated between 0.541 (Cox & Snell) and 0.722 (Nagelkerke), as can be observed in Table 4.

Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

529

It was found that the variable IDHM when inserted in the statistical model generates redundancy and the results are not displayed by the software with its presence. By removing the variable from the model, the SPSS generated the results presented in Table 5.

Table 5

Variables of the tested model

	Variables	B	S.E.	Forest	Df	Itself.	Exp(B)
	saldo_rp_proc_100mil	-0,018	0,016	1,236	1	0,266	0,982
	saldo_rp_naoproc_100mil*	0,038	0,021	3,174	1	0,075	1,039
	result_orc_100mil	0,000	0,002	0,010	1	0,921	1,000
	ger_caixa_100mil	0,000	0,007	0,001	1	0,982	1,000
	trvol_uniao_10mil	-0,006	0,006	1,194	1	0,274	0,994
Step 1	trvol_estado_10mil**	0,030	0,014	4,319	1	0,038	1,031
	op_cred_100mil	0,046	0,043	1,135	1	0,287	1,047
	desp_invest_milhao	0,088	0,085	1,081	1	0,299	1,092
	IDEB*	-1,492	0,865	2,978	1	0,084	0,225
	aliado_gov	-8,380	7,222	1,347	1	0,246	0,000
	aliado_pres*	5,277	2,737	3,718	1	0,054	195,834
	Constant	-277,153	102533,890	0,000	1	0,998	0,000

Note.*Significant at 0.10. **Significant at 0.05.

When testing the model, it was possible to observe that it is not constant. It was possible to observe that the voluntary transfers variable from the states (trvol_estado_10mil) was significant at 5% (five percent) and with a positive coefficient (B) sign, indicating that an increase in these transfers increases the expected probability of successful re-election or reappointment of the party. Three other variables were significant at 10%: balance remains payable unprocessed (saldo_rp_naoproc_100mil) and the variable Mayor allied to the President of the Republic (aliado_pres) and IDEB. None of them was significant at the level of 1%, which demonstrates that the explanatory power of the selected variables has explanatory limitations.

Although the significance level of these last 3 (three) variables was higher than 5%, the values show a tendency to influence the results if *it was considered* p-value of 10% significance. The data suggest that the relationships would occur more for the representative variable of the alliance of the mayor to the president of the republic (aliado_pres), followed by the balance of unprocessed remains to pay (saldo_rp_naoproc_100mil) and, finally, the education variable (IDEB).

To verify if there would be any influence of variables that were not relevant in the application of the logistic regression model proposed in this study, individual models were generated, in which each independent variable that did not present significance was tested individually with the dependent variable (re-election or party re-leadership). Thus, the variables processed balance of remains to be paid, budget result, cash generation/consumption, voluntary transfers from the Union, credit operations, investment expenses, IDHM and mayor allied to the Governor were tested. Table 6 presents the adjustment index for each of these variables that did not reach significance in the general model.

Testing the individual models of variables that were not significant in the general model, the results were adequate (significant) only for saldo_rp_proc_100mil (0.038), op_cred_100mil (0.016) and desp_invest_milhao (0.003), as shown in Table 7.

The quality measurements of the pseudos R^2 (De Cox & Snell and Nagelkerke) model adjustment applied to the estimated individual models were low for all. However, those of the models that were adequate in *omnibustest* are slightly superior to the other ones.

Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

530

Table 6
Omnibus Tests of Model Coefficients

Model			Chi-square	Df	Itself.
saldo_rp_proc_100mil	Step 1	Step	4,284	1	0,038
		Block	4,284	1	0,038
		Model	4,284	1	0,038
result_orc_100mil	Step 1	Step	1,073	1	0,300
		Block	1,073	1	0,300
		Model	1,073	1	0,300
ger_caixa_100mil	Step 1	Step	0,002	1	0,962
		Block	0,002	1	0,962
		Model	0,002	1	0,962
trvol_uniao_10mil	Step 1	Step	0,083	1	0,773
		Block	0,083	1	0,773
		Model	0,083	1	0,773
op_cred_100mil	Step 1	Step	5,752	1	0,016
		Block	5,752	1	0,016
		Model	5,752	1	0,016
desp_invest_milhao	Step 1	Step	8,718	1	0,003
		Block	8,718	1	0,003
		Model	8,718	1	0,003
IDHM	Step 1	Step	0,305	1	0,581
		Block	0,305	1	0,581
		Model	0,305	1	0,581
aliado_gov (1)	Step 1	Step	1,491	1	0,222
		Block	1,491	1	0,222
		Model	1,491	1	0,222

Table 7
Quality statistics of the adjustment of individual models

Model	Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
saldo_rp_proc_100mil	1	132,463	0,042	0,057
result_orc_100mil	1	135,675	0,011	0,014
ger_caixa_100mil	1	136,745	0,000	0,000
trvol_uniao_10mil	1	136,665	0,001	0,001
op_cred_100mil	1	130,996	0,056	0,075
desp_invest_milhao	1	128,029	0,084	0,113
IDHM	1	136,442	0,003	0,004
aliado_gov(1)	1	135,257	0,015	0,020

Table 8
Hosmer and Lemeshow testing for predictive accuracy of individual models

Model	Step	Chi-square	df	Itself.
saldo_rp_proc_100mil	1	11,844	8	0,158
result_orc_100mil	1	6,586	8	0,582
ger_caixa_100mil	1	3,629	8	0,889
trvol_uniao_10mil	1	16,171	8	0,040
op_cred_100mil	1	7,457	2	0,024
desp_invest_milhao	1	1,810	8	0,986
IDHM	1	20,656	7	0,004
aliado_gov (1)	1	0,000	0	.

The Hosmer and Lemeshow Test (2000) to evaluate the predictive accuracy of individual models, Sig. > 0.05 and/or greater than 0.10 only for the variables saldo_rp_proc_100mil and desp_invest_milhao. Note that the specific models of the dichotomous variable (allied to the governor) did not generate estimates, revealing its irrelevance for the analysis.

Table 9

Testing of individual models

Model			B	S.E.	Forest	df	Itself	Exp(B)
saldo_rp_proc_100mil*	Step 1	saldo_rp_proc_100mil	0,004	0,002	3,632	1	0,057	1,004
		Constant	-0,522	0,280	3,471	1	0,062	0,593
result_orc_100mil	Step 1	result_orc_100mil	0,000	0,001	0,761	1	0,383	1,000
		Constant	-0,203	0,211	0,919	1	0,338	0,817
ger_caixa_100mil	Step 1	ger_caixa_100mil	0,000	0,002	0,002	1	0,962	1,000
		Constant	-0,138	0,214	0,415	1	0,519	0,871
trvol_uniao_10mil	Step 1	trvol_uniao_10mil	0,000	0,001	0,081	1	0,775	1,000
		Constant	-0,113	0,225	0,250	1	0,617	0,893
op_cred_100mil*	Step 1	op_cred_100mil	0,067	0,040	2,786	1	0,005	1,069
		Constant	-0,313	0,218	2,069	1	0,150	0,731
desp_invest_milhao**	Step 1	desp_invest_milhao	0,043	0,016	7,444	1	0,006	1,044
		Constant	-0,764	0,301	6,422	1	0,011	0,466
IDHM	Step 1	IDHM	1,419	2,572	0,304	1	0,581	4,131
		Constant	-1,003	1,576	0,405	1	0,524	0,367
aliado_gov (1)	Step 1	aliado_gov (1)	-0,575	0,477	1,454	1	0,228	0,563
		Constant	0,000	0,232	0,000	1	1,000	1,000

Note. *Significant at 0.10. **Significant at 0.05.

Although the variable credit operations did not obtain a satisfactory index in the Hosmer and Lemeshow Test (2000), both the model of this variable and the models of the processed balance remains to pay and expenses with investments variables were significant and the ratio of the coefficients (B) of the three was positive, indicating that an increase in these values provides an increase in the expected probability of success re-election or reappointment of the party.

5 DISCUSSION

When testing the model, only the election and post-election years presented relevance, and of the variables selected for the study, four presented significance, one of 5%: voluntary transfers from the States, and the other three of 10%: ally of the President of the Republic, the balance of unprocessed remains to pay, and IDEB, in that order.

The variable voluntary transfers of the state showed a significance of 5% and a sign of the positive coefficient, indicating that the increase in these transfers increases the probability of re-election of the mayor or re-election of the party. Ferreira et al. (2019) recall that in Brazilian elections, while ballots for the choice of state and federal governments take place in the same year, municipal elections take place two years after these, and this characteristic can motivate holders of these governments to use voluntary transfers to favour allied mayors.

The analysis carried out by the authors indicated that, even in situations where voters identified the competence of the holder, if he or she does not show to be supported by the governor, support represented mainly by voluntary transfers, the tendency of the mayor to be re-elected would be lower. It is possible that this is also a reality in Ceará, given the

Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

532

precariousness of most municipalities in the State, therefore deserving further studies on this hypothesis.

The variable balance of unprocessed remains to pay obtained a significant result of 10% and a positive coefficient (*p-value* 0.075), bringing signs of a possible influence of it if *p-value was accepted* at this level. Studies on remains carried out by Rogoff and Sibert (1988) and Rogoff (1990) assess that considering it as an influencer in electoral processes would be related to informational asymmetry (Bartoluzzio & Anjos, 2020). When a government increases the registration of unprocessed remains to pay, it may be trying to appear competent for the disclosure of overvalued expenses that can be canceled in the subsequent fiscal year, as indicated by Silva (2016).

The observation of significance for the variable IDEB is equally valid (p-value 0.084) if it were *adopted at a* p-value of 10%. It is important to highlight that compared to the balance of unprocessed remains to pay, this variable was positioned later, indicating its lower influence. Although the influence of the variable did not present itself conclusively, authors such as Guerra et al. (2018) identified the interference of the educational level in the elections, and these 2 (two) last authors stated that high illiteracy rates are able to increase the chances of success in re-elections/reappointments. Although the relationship between lower voter awareness and the probability of re-election or reappointment is intuitive, the result presented shows only a trend in relation to the municipalities of Ceará in the sample, which could be confirmed if the scope of the sample was expanded and all regions of the country included.

Among the three (three) variables with a significance level of 10%, the one represented by the federal political alignment was the one closest to the p-value of 5% (0.054). This result leans towards the conclusions presented by Ferreira et al. *(2019),* who also identified that political alignment with the president maximizes the chances of re-election. The study by Sakurai and Menezes-Filho (2008) identified that political alignment with the president decreases the chances of a mayor being re-elected, and according to Queiroz et al. (2019), the variable that indicates political alignment with the President of the Republic did not exert influence.

When analysing the variables that did not obtain significance in the statistical analysis individually (budget result, cash generation and consumption, voluntary transfers of the union, credit operations, investment expenses, IDHM, an allied governor, the right-wing party, and the left-wing party), a significance was observed for the processed balance of remains to be paid, credit operations, and investment expenses variables.

The processed balance of remains to be paid was significant at 10% and presented a positive coefficient, indicating that the increase in the value entered in this variable may increase the probability of re-election or renewal. The processed remains to be paid, unlike the unprocessed ones, would represent the use of fiscal policy instruments and not accounting information since they can generate the discontinuity of the provision of services and goods for the citizen-taxpayer since these can be interrupted depending on the discharge of the obligations assumed.

This finding contradicts Vicente and Nascimento (2012) who identified that an increase in electoral years of total expenses, due to the registration in processed remains to be paid, compromises the financial limit of the following year and reduces the chance of renewal. This finding deserves further study, because, in addition to contradicting previous studies, it may be contrary to Art. 42 of Complementary Law N. 101 (2000). The LRF determines the seal to the holder of Power or body, in the last two to four months of its mandate, to contract an obligation of expenditure that cannot be fulfilled entirely within itself, or that has installments to be paid in the following year without sufficient availability of cash for this purpose.

Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

533

The variable credit operation also obtained a significance of 10% and its coefficient was also positive, which corroborates the findings found by Rodrigues (2015). All of them identified that the increase in indebtedness with credit operations raises cash, and cash generation in election years increases the likelihood of renewal. A justification for this behavior may be a signal to the electorate of competence by carrying out clearly perceptible expenses. Nakaguma and Bender (2010) also identified the same behavior in election years, and also observed the reduction of credit operations in post-election years. The researchers attribute this behavior of managers to the respect for the LRF, choosing to significantly reduce costs and capital revenues, and increasing current and tax revenues.

Finally, the investment expenses variable obtained a significance of 5% and the coefficient ratio was positive, being the most noticeable variable throughout the analyzed studies. Several types of research on political cycles refer to investment expenditure, which demonstrates the importance of this variable in the characterization of cycles. Rogoff (1990) was one of the pioneers of these studies and pointed to a reduction in these expenses when the opportunistic behavior of the ruler was verified. Drazen (2000) found that opportunistic tax policies that are characterized by increased capital expenditure swell to the detriment of current expenditure. The studies of Dias et al. (2018), Guerra et al. (2018), and Crispim et al. (2021) also indicated that voters reward the mayors who promote increases related to public investments in the period close to the elections. Queiroz and Silva (2011) identified, in addition to this positive influence caused by the increase in investment spending in pre-election and electoral years, that these investments are usually financed by federal capital transfers. The study of Guerra et al. (2018) also identified that the governors who ran for re-elections spent more on capital expenditures and investments and less on education in election years.

The researchers also highlight the fact that the capital expenditure variable did not show significance (p-value 0.299), a situation that is opposed to several studies (Crispim et al., 2021; Guerra et al., 2018; Queiroz and Silva, 2011). The result is important because, historically, public managers carry out public constructions in the period before the election to demonstrate efficiency and when the election ends, the pace of investments decreases, even stopping due to lack of resources.

Regarding the choice of variables, it was possible to identify limitations of the research, that of the 16 (sixteen) variables selected only 4 (four) showed results with statistical significance, with 01 (one) of 5% (voluntary transfers from the States) and 3 (three) of 10% (allied to the President of the Republic, balance of unprocessed remains to be paid and IDEB) and none of them of 1%. Therefore, it is possible to conclude that the explanatory power of the selected variables is reduced and needs to be reviewed in future studies, so that new behaviors not identified in the present study are revealed.

6 CONCLUSION

This research aimed to investigate the use of the budget execution of public expenditure as an instrument of political interference in the electoral process, to promote the re-election of mayors, or the conduct of other candidates for the head of the municipal executive supported by those, in municipalities of Ceará. Econometric tests were performed, using logistic analysis in data collected in 12 municipalities in Ceará that brought together most of the population of the State (Fortaleza, Caucaia, Juazeiro do Norte, Maracanaú, Sobral, Crato, Itapipoca, Maranguape, Iguatu, Quixadá, Canindé, Aquiraz), in the period of 4 budget cycles (2000 and

Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

534

2016). All data collected for the research underwent statistical treatment using the *Software Statistical Pakage for Social Sciences (SPSS).*

The dependent variable chosen to make up the logistic model defined for the survey was the re-election or reappointment of the mayor or party. As for the independent variables, eleven of fiscal/budgetary origin (balance of unprocessed remains to be paid, balance of processded remains to be paid, budget result, generation/consumption of cash in the year, current budget result, voluntary transfers received from the Union, voluntary transfers received from the States, tax revenues, credit operations, personnel expenses and expenses, investment expenses) were used; two *dummies* (thestate political lineage, federal political alignment), as well as data on GDP, IDEB, IDHM.

The examination of data collected based on descriptive statistics indicated that the total of the 60 mayors elected in the five municipal elections that took place between 2000 and 2016, 16 were re-elected (26.67%) and there were 15 re-elections (25% of the elected mayors were affiliated to the same party as their predecessor). Analyzing the budgetary fiscal variables, significant dispersions were observed. The variables related to revenues point to the dependence of municipalities on transfers from the Union and States, whether they are mandatory or not. Voluntary transfers from the Union and those of the States, although of low percentage (0.34% and 0.1% of current net revenue respectively), occurred more massively at very specific times: in the election years and in the years immediately after the elections. Credit operations were also accentuated in very specific periods: in the pre-election and electoral years. On the other hand, the variables balance of processed remains to be paid and the balance of unprocessed remains to be paid both presented peaks in the election years suffering considerable retraction in the year following the election. Personnel and charges expenses are the most significant in all budgets analyzed, but none of the municipalities in the sample exceeded the spending limit established by the LRF. The investment expenses variable corresponded to 8.97% of total net revenue in the period, a low percentage and has been experiencing successive retractions in the last eight years. The budget result and current result accounts represented 4.63% and 11.89% of current net revenue, and it was possible to observe that both remained at high levels in the election year with a tendency to a significant decrease in the following year, often presenting deficit. As for cash generation/consumption, cash generation was observed in the two years after the elections, falling about 60% in pre-election years, and the election years presented strong cash consumption. The mean IDHM was 0.53728, considered low. The GDP of the municipalities in the sample showed a very large discrepancy. Fortaleza accounts for 67.78% of the total, and the second municipality with the highest GDP was Maracanaú, with 8.40%. The municipality with the lowest GDP was Canindé, with 0.7%. The IDEB was quite uniform during the analyzed period, with unsatisfactory performance in most of the municipalities of the sample.

In the statistical tests to identify multicollinearity conditions between the variables, it was found that the data from Fortaleza did not allow comparison due to discrepancies in relation to the others. By excluding the Municipality of Fortaleza and considering only the data of the election years and the years immediately after the elections, the results were satisfactory for most variables (balance of processed remains to be paid, balance of unprocessed remains to be paid, budget result, cash generation/consumption, voluntary transfers from the Union, voluntary transfers from the States, investment expenses, IDHM, IDEB, allied with the governor, allied with the President). However, considering p-value of 5%, only the voluntary transfers from the Union variable and at 10%, the federal political alignment, balance of unprocessed remains to be paid and IDEB were significant.

The statistical model was applied in each of the variables that did not obtain significance in the joint analysis (balance of processed remains to be paid, budget result, cash

generation/consumption, voluntary transfers from the Union, credit operations, investment expenses, IDHM, ally of the Governor). Each of them was confronted, one by one, with the dependent variable of re-election or reappointment of the party. In this fiscal year, the following variables were returned: balance of processed remains to be paid, credit operations and investment expenses.

As the main limitations, it was observed that the study did not take up any variables that showed a significance level of 1%. An identified 01 (one) to 5% (voluntary transfers from the States) and 3 (three) to 10% (allied to the President of the Republic, balance of unprocessed remains to be paid and IDEB), which calls into question their predictive value.

In addition, in view of the evidence demonstrated, a new definition of untested variables is suggested for future research, such as personnel expenditure, short-term benefit grants and expenses with the maintenance of the administrative machine, which may signal the use of political power for electoral purposes.

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536

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537

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Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

538

Processo Eleitoral em Municípios Cearenses e Ocorrência de Ciclos Políticos Orçamentários

RESUMO

Objetivo*: o presente artigo visa avaliar se o processo eleitoral em Municípios Cearenses é capaz de exercer influência sobre a execução da despesa pública orçamentária.*

Método: *uso de regressão linear com a utilização de diversas variáveis (variável dependente: reeleição; variáveis independentes: despesa com investimento, operações de crédito, restos a pagar, transferências voluntarias, resultado orçamentário, geração de caixa. IDEB, IDHM e alinhamento político federal) para aferir a existência de ciclos político-orçamentários.*

Originalidade/Relevância: *testa outras variáveis que podem estar associadas à Teoria do Ciclos Político-Orçamentários.*

Resultados: *as variáveis independentes (despesa com investimento, operações de crédito, restos a pagar, transferências voluntárias, resultado orçamentário, geração de caixa, IDEB, IDHM e alinhamento político federal) foram confrontadas, individualmente, com a variável dependente reeleição, tendo sido consideradas significativas somente as de saldo de restos a pagar processados, operações de crédito e despesas com investimento.*

Contribuições Teóricas/Metodológicas*: o estudo testa a Teoria com outras variáveis socioeconômicas ainda não exploradas em estudos anteriores, o que contribui para novas vertentes em futuras pesquisas.*

Contribuições Sociais/para a Gestão*: Destaca que qualquer variável do tipo socioeconômica é capaz de auxiliar na permanência dos políticos no poder, face sua manipulação. Na prática, assinala-se que determinadas variáveis são mais susceptíveis que outras.*

Palavras-chave*: Despesa. Ciclo orçamentário. Eleição. Ceará.*

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Revista Contabilidade, Gestão e Governança. Brasília, V.25 N.3, p. 524-540, Sep.-Dec. 2022

540